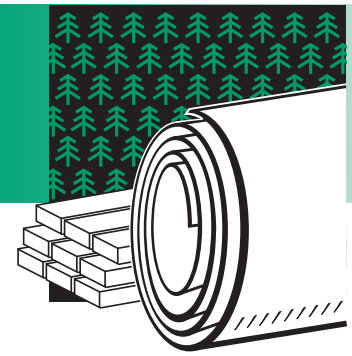


# FOREST PRODUCTS

## Project Fact Sheet



## MOLTEN FILM PAPER DRYER

### BENEFITS

- Energy savings could total as much as 9 million barrels of crude oil annually in the United States
- Energy savings could be as much as .6 million Btu per ton of paper produced
- At least 80% less capital investment required than conventional systems

### APPLICATIONS

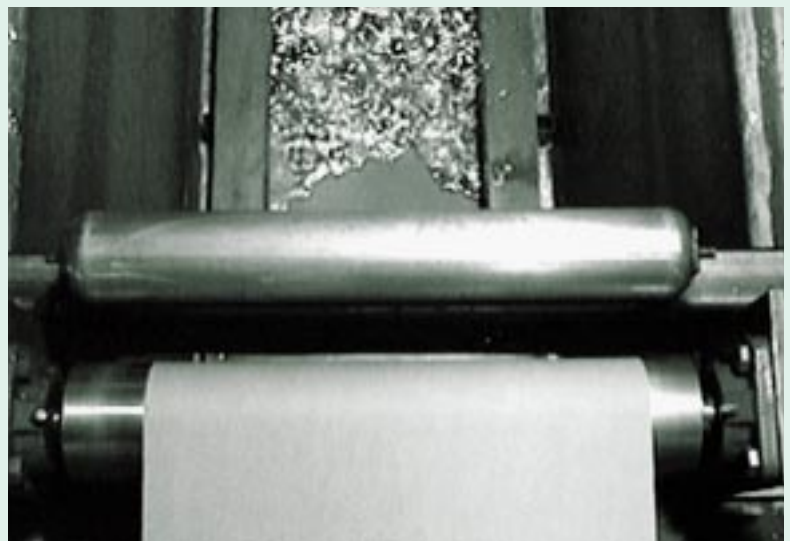
This new hardware and process is designed to be used in drying paper, linerboard, corrugated cardboard, and other papers.

## HIGH-INTENSITY PAPER PRODUCTION ACHIEVABLE WITH REVOLUTIONARY NEW PROCESS

Since early in this century, paper products have been dried the same way: by feeding a wet web of fibers between heated metal cylindrical drums. To increase production, temperatures are raised, which requires greater pressure on the paper to keep the boiling water and evaporation from raising and buckling it. These factors add up to high-energy use and capital investment.

The molten metal process of paper drying is a revolutionary change in process and hardware, now in development with the help of the U. S. Department of Energy's Inventions and Innovation Program. When the wet web of paper comes in contact with a molten metal bath, heat is rapidly transferred to the paper surface and the water boils off as steam. Because of its high surface tension, the molten metal does not stick to the surface of the paper as it exits the bath. It is easily peeled off the dry paper and returned to the melter for reuse.

### MOLTEN FILM PAPER DRYER



The first technical advance in paper drying in nearly a century will use a molten metal bath to dry paper products without the major capital investment of conventional drying equipment, which can require dozens of heated metal drums.



## Project Description

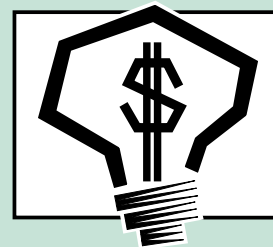
**Goal:** The goals of the project are to build a pilot-plant-sized model of the equipment, to optimize the design of the hardware, and to test, analyze, fine-tune, and report on the system's operation.

The wet paper slurry is flowed in a web to a bath of hot molten metal. The web picks up heat from the molten metal, which causes the water in the paper to boil off in a steam. The metal does not stick to the paper surface as it exits the bath. The type of metal used is a eutectic alloy that melts at a temperature low enough not to harm the paper fibers.

Harvest Technology is developing this new technology with the help of a grant funded by the Inventions and Innovation Program through the Department of Energy's Office of Industrial Technologies.

## Progress and Milestones

- The technology has been well defined and tested at the laboratory level.
- A Small Business Innovation Research grant was awarded to study the variables in the process.
- A patent has been granted.



The Inventions and Innovation Program works with inventors of energy-related technologies to establish technical performance and conduct early development. Ideas that have significant energy savings impact and market potential are chosen for financial assistance through a competitive solicitation process. Technical guidance and commercialization support are also extended to successful applicants.

## PROJECT PARTNERS

Inventions and Innovation Program  
Washington, DC

Harvest Technology  
Sun Valley, CA

## FOR PROJECT INFORMATION, CONTACT:

David Walter Warren  
9253 Glenoaks Blvd.  
Sun Valley, CA 91352  
Phone: (818) 767-3157  
Fax: (818) 767-0246

## FOR PROGRAM INFORMATION, CONTACT:

Sandy Glatt  
Program Manager  
Inventions & Innovation Program  
U.S. Department of Energy  
1000 Independence Ave., SW  
Washington, DC 20585  
Phone: (202) 586-2079  
Fax: (202) 586-7114  
sandy.glatt@ee.doe.gov

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Office of Industrial Technologies  
Energy Efficiency  
and Renewable Energy  
U.S. Department of Energy  
Washington, DC 20585

## INDUSTRY OF THE FUTURE—FOREST PRODUCTS AND AGENDA 2020

In November 1994, DOE's Secretary of Energy and the Chairman of the American Forest and Paper Association signed a compact, establishing a research partnership involving the forest products industry and DOE. A key feature of this partnership was a strategic technology plan—**Agenda 2020: A Technology Vision and Research Agenda for America's Forest, Wood and Paper Industry**. Agenda 2020 includes goals for the research partnership and a plan to address the industry's needs in six critical areas:

- Energy performance
- Environmental performance
- Capital effectiveness
- Recycling
- Sensors and controls
- Sustainable forestry

For each of these areas, task groups including industry, university and government representatives have developed detailed research agendas called research pathways—all of which are consistent with Agenda 2020's goals.

OIT Forest Products Team Leader: Valri Robinson (202) 586-0937.



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